

ENDANGERED SPECIES ACT - SECTION 7

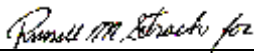
BIOLOGICAL OPINION

Batched Bridge Scour Repair Projects - Wenatchee River - Chelan County
WSB-99-591
WSB-00-230

Agency: U.S. Department of Transportation, Federal Highway Administration

Consultation

Conducted By: National Marine Fisheries Service
Northwest Region
Washington State Habitat Branch Office

Approved 
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I. BACKGROUND AND DESCRIPTION OF THE PROPOSED ACTION

A. Background and Consultation History

Washington State Department of Transportation (WSDOT), with the financial assistance of the Federal Highway Administration (FHWA), designs, constructs, and maintains the state highway infrastructure in Washington State. Included in the inventory of highway infrastructure are numerous bridge structures crossing over streams and rivers within the state. Many of these bridges have support pilings and foundations constructed within the active channel of the streams they cross. Over time, normal channel flow or high flow events may cause erosion or scour around the foundations that threatens the structural integrity of these bridges. When this occurs, WSDOT proposes projects to repair the bridge scour while attempting to minimize the impacts to instream aquatic resources.

The WSDOT is the lead agency and proponent of the action that is the subject of this consultation. Furthermore, WSDOT is the designated non-federal representative for FHWA-related actions in Washington that are supported by funds from FHWA; such funding provides a basis (a “federal nexus”) for this consultation.

On September 3, 1999 the National Marine Fisheries Service (NMFS) received a Batched Biological Assessment (BA) and request from the FHWA for Endangered Species Act (ESA) section 7 consultation for the repair of several bridges that were designated as “scour critical.” The scour critical designation means that the structural integrity of the bridge is questionable, possibly leading to traffic restrictions or risk of bridge failure. The proposed repair mechanisms generally include the placement of riprap or loose fill in scour holes, and the placement of rock groins or barbs to deflect currents away from some of the foundation structures.

Three of the proposed sites are in the upper Columbia River (UCR) evolutionarily significant unit (ESU). The FHWA, through WSDOT, has determined that UCR chinook salmon (*Oncorhynchus tshawytscha*) and UCR steelhead (*Oncorhynchus mykiss*) may occur in the project areas within the UCR ESU. The BA’s effects determinations for each of the projects is that they *are likely to adversely affect* chinook salmon and steelhead.

After submitting the initial BA, the agencies engaged in the following series of communications to facilitate the preparation of this Biological Opinion (BO):

- ☐ On December 9, 1999 NMFS responded to the BA with a fourteen point request for additional and clarifying information about the proposed projects.
- ☐ On January 5, 2000 WSDOT provided the requested information, supplemented by species presence information and proposed in-water work windows.
- ☐ The WSDOT and NMFS coordinated project timing with the Eastern Washington office of the Fish and Wildlife Service (FWS).
- ☐ On February 8, 2000 NMFS received a BA and consultation request from FHWA and WSDOT for two additional bridge scour projects on the Wenatchee River along with a verbal

request to include them in this “batched bridge scour” consultation.

- ☐ NMFS requested and on March 20, 2000 received habitat matrix documentation for all of the proposed project sites.
- ☐ On April 13, 2000 NMFS requested and received a draft copy of the Hydraulic Permit Approval (HPA) to be issued by the Washington State Department of Fish and Wildlife (WDFW).
- ☐ On May 22, 2000 NMFS received a copy of the final HPAs issued by the WDFW for these projects.

This BO reflects the results of the consultation process. This response to the batched BA is a response only to the projects proposed in the UCR ESU. A separate BO will be issued for those projects proposed in the Puget Sound chinook ESU. The consultation process has involved correspondence and communications to obtain the additional information and clarify the BA. Additional meetings have involved FWS and WDFW. The WDFW will be issuing a HPA. The HPA includes work window timing and technical provisions to protect fish life and fish habitat. Mitigation requirements of the HPA include the placement of boulders and large woody debris (LWD). The HPA is attached to this BO as Appendix A. As appropriate, modifications to the project proposals to reduce impacts to the listed species have been discussed and incorporated into the project design of the individual projects. These have included modifications of the work window, the inclusion of LWD in the project design, and the utilization of work platform rock for habitat structure. Riparian impacts will be minimized and affected riparian areas will be replanted.

The objective of this BO is to determine whether the proposed bridge scour repair projects are likely to jeopardize the continued existence of the listed species, UCR steelhead and UCR chinook. In addition, the BO must assess whether proposed critical habitat will be adversely modified or destroyed.

B. Description of the Proposed Action(s)

1. Wenatchee River 207/4, 2/233A, 2/226N, 2/227N

Four of the project sites occur on the Wenatchee River and a fifth on Peshastin Creek, a tributary to the Wenatchee River. The Wenatchee River is tributary to the upper Columbia River in Chelan County. The headwaters of the Wenatchee River emanate from the Cascade Range, flowing through moderate gradient upland forests, through the horticultural areas in the mid-lands, and the more densely populated areas of the City of Wenatchee before meeting its confluence with the Columbia River.

Bridge 207/4 is located within the Wenatchee National Forest. Unstable banks downstream from the bridge appear to be the result of recent bridge scouring activity. There is significant evidence of lateral channel migration and erosion at the northwest bank of the river. Piers 1 and 2 at the north end of the bridge have experienced significant scour. The project involves the placement of 60 cubic yards of riprap covering approximately 200 square feet around pier 2. The WSDOT proposes the use of 60 cubic yards of riprap to construct a barb just upstream of pier 2. The barb will extend about 50 feet

into the river. The intent of the barb is to re-direct secondary currents across the bed of the stream and away from the bank. The barb will cover an additional area of approximately 200 square feet of river substrate composed of large cobble and gravel. The work window for this project will be from July 1 through August 4.

Bridges 2/226N and 2/227N are located at MP 105.78 and 106.1, respectively. At site 2/226N, riprap placement is proposed around piers 4 and 5. Temporary access routes will be constructed from both banks. Work platforms will be constructed of large clean rounded gravel contained by riprap. The platform for pier 4 will cover 300 square feet of river substrate. The pad for pier 5 will cover 200 square feet. About 284 cubic yards of riprap will be placed to protect the two piers. Some of the construction material will be passed over the construction pad and some will come from the pad itself as the project nears completion. Excess riprap and rounded gravel will be dispersed into the river to create substrate for invertebrates and increased spawning habitat.

The bridge at 2/227N requires scour repair at piers 2, 3, and 4. Construction at this site will be similar to work on Bridge 2/226N. Work platforms constructed from opposite banks will allow continued flow of the river through the primary cells between pier 3 and 4. One platform will cover approximately 700 square feet and the other approximately 300 square feet. About 140 yards of material will be placed around pier 2. Approximately 340 cubic yards will be placed around piers 3 and 4 to a depth of roughly 9 feet. Excess riprap and rounded gravel will be used to create in-channel habitat features. A WDFW Habitat Biologist will direct placement of this material. The work window for this project is July 1 through August 11.

Bridge 2/233 is located in the lower reaches of the Wenatchee River. The bridge connects the town of Cashmere with SR 2. River substrate at the project site is mostly river cobble with some pockets of gravel. Riparian habitat consists of black cottonwood, a few saplings, and grasses. The north bank of the river is already heavily riprapped. Scouring has occurred at piers 1 and 2 at the north end of the bridge. The WSDOT proposes to construct a stream barb using about 50 cubic yards of riprap upstream of the bridge. The purpose of the barb would be to realign flow and stream energy away from the piers. The barb would extend about 50 feet into the river, displacing about 753 square feet of cobble /gravel substrate. An excavator will be used to place the riprap. Access will be from the riprapped north bank so impacts to riparian vegetation will be minimal. HPA provisions and best management practices (BMPs) proposed will insure that sediment contribution does not travel beyond the Washington State Department of Ecology (WDOE) water quality standards approved 300 foot mixing zone. The backwater habitat that exists upstream of the project will not be impacted. The work window will be July 15 through July 30.

2. Peshastin Creek 2/224

Peshastin Creek lies within the Wenatchee Watershed Resource Inventory Area (WRIA). The creek is fairly steep and fast flowing in its upper reaches. The river substrate is mainly boulders with some bedrock and large cobble. Peshastin Creek appears to be mainly channelized in the action area. The creek flows at a moderately high velocity and has a substrate of cobble and large gravel. The project

area, bridge 2/224, is near the junction of SR 2 and SR 97 approximately three-fourth of a mile upstream from the confluence with the Wenatchee River. A bar of cobble and large gravel occurs immediately downstream of the bridge.

Two bridges (north and south) are present at the project site. Pier 4 at the south bridge and pier 3 at the north bridge have been exposed by recent flood events. To protect the bridge foundations and the streambed the proposed project calls for placement of two rock drop structures using 60 cubic yards of riprap in the streambed. One would be placed just down stream of the north bridge, the other just upstream between the north and south bridge. The structures would provide grade control, flow realignment, and energy dissipation. Additionally, 20 cubic yards of well graded heavy loose riprap would be placed around the footings of pier 4 and 20 cubic yards around pier 3. Riprap would cover about 200 square feet. An excavator will be used to place the material. Access will be from the west bank where little riparian vegetation occurs. The work window will be August 1 through August 11.

The projects design and construction staging incorporate Best Management Practices (BMPs). In addition, the project's HPA conditions help address any potential effects of the project, in some cases minimizing and assuring the short-term nature of these impacts.

The WSDOT and FHWA offer that certain conservation measures "intended to minimize the chances of impacting salmonid species regulated under the ESA are warranted." Accordingly, the following conservation measures will be implemented:

1. The projects must obtain and comply with the conditions within a HPA permit issued by WDFW.
2. All repair activities shall only occur during the in-water work window identified by the WDFW in the HPA permit.
3. All repair activities shall remain consistent with the Temporary Erosion and Sediment Control (TESC) Plan Chapters of the most recent versions of the *WSDOT Highway Construction Manual*, *Highway Runoff Manual*, and *Standards and Specifications for Road, Bridge and Municipal Construction*.
4. All repair activities shall comply with water quality standards identified in the Water Quality Implementing Agreement between WSDOT and the WDOE. This includes meeting the standards for sediment "mixing zones" by whatever means necessary, possibly including temporary water isolation systems.
5. Heavy equipment to be used in the wetted perimeter of streams shall be steam cleaned and free of deleterious material prior to commencement of the work.
6. Maintenance of water quality is addressed by the 1988 *Memorandum of Understanding* between WSDOT and WDOE. The General Conditions of the Implementing Agreement provide that "All work in or near the water, and water discharged from the site shall meet the State's Water Quality Standards WAC 173-201A. Mixing zones are authorized for brief

periods, to allow for dilution of construction turbidity. Turbidity standards must be met at a point below a “mixing zone” extending 100, 200 or 300 feet downstream of the construction site, depending on the stream flow volume.

7. Where water diversion tactics are employed, the necessary measures shall be performed to prevent fish from entering contained areas and to remove entrapped fish. These measures could include netting and/or electro shocking of fish. Wastewater from this activity shall be removed from the work area landward of the water line to allow removal of fine sediment and other contaminants prior to being discharged into the stream.

8. Any concrete to be used in the repairs shall be sufficiently cured prior to contact with water to avoid leaching. Fresh concrete shall not be allowed to come into contact with streams. Wooden components that will be in contact with the water shall not contain creosote or pentachlorophenol.

9. Constructed pullouts and work platforms shall be structurally stable and shall be composed of material that will not erode into the water.

10. Alteration or disturbance of the bank and bank vegetation shall be limited to that necessary to access the project. Where disturbance to soils/vegetation is necessary to complete the repairs, these areas shall be revegetated with native self-sustaining species immediately upon completion of the repair activities.

11. Riprap and quarry spalls used for structure protection shall be clean, angular rock, which shall be installed to withstand the 100-year peak flow.

12. Only clean, inert material shall be allowed to contact the water.

13. Equipment used for these projects shall be free of external petroleum based products while working around the water. Equipment shall be checked daily for leaks and any necessary repairs shall be completed prior to commencing work activities along or above the river.

14. Projects that involve the construction of riprap bank barbs will incorporate LWD into the structure consistent with standards identified in the draft *Integrated Streambank Protection Guidelines (ISPG)*, 1998, prepared by WDFW.

II. STATUS OF THE SPECIES AND CRITICAL HABITAT

The UCR steelhead were listed as endangered pursuant to the ESA on August 18, 1997 (62 Fed. Reg. 43937). The UCR steelhead ESU includes the main stem Columbia River and its tributaries that occur upstream from the confluence with the Yakima River to the United States-Canada border. Critical habitat was designated for the UCR steelhead on February 16, 2000 (65 Fed. Reg. 7775).

The UCR spring chinook salmon were listed as endangered pursuant to the ESA on March 24, 1999 (64 Fed. Reg. 14308). Critical habitat was designated on February 16, 2000 (65 Fed. Reg. 7774).

The UCR spring chinook ESU includes stream-type chinook salmon that spawn upstream of the Rock Island Dam in the Wenatchee, Entiat, and Methow Rivers and their tributaries. Further information related to listing status and life history requirements of chinook and steelhead may be found in Busby et al. (1996), Myers et al. (1998), and in Appendixes B and C.

A. Factors Affecting Species Covered in this Biological Opinion

NMFS prepared a document addressing the factors leading to the decline of west coast steelhead entitled, “Factors for Decline: A Supplement to the Notice of Determination for West Coast Steelhead” (NMFS, 1996a). This report concludes that all of the factors identified in section 4(a)(1) of the ESA have played a role in the decline of the species. The report identifies destruction and modification of habitat, overutilization for recreational purposes, and natural and human-made factors as being the primary reasons for the decline of west coast steelhead. The proposed action analyzed in this BO includes activities that could result in environmental effects including modification of habitat. The extent and duration of such habitat modification and a conclusion regarding the effects on the UCR Steelhead are provided in sections IV and V of this BO.

In addition to “Factors for Decline: A Supplement to the Notice of Determination for West Coast Steelhead,” NMFS has prepared “Factors Contributing to the Decline of West Coast Chinook Salmon: An Addendum to the 1996 West Coast Steelhead Factors for Decline Report” (NMFS, 1998). That report discusses specific factors affecting west coast chinook salmon. In this report, NMFS concludes, as it did for the steelhead, that all of the factors identified in section 4(a)(1) of the ESA have played a role in the decline of chinook salmon. The report identifies destruction and modification of habitat, overutilization for recreational purposes, and natural and human-made factors as being the primary reasons for the decline of chinook salmon.

The batched proposed actions includes activities that would have some level of effects with at least short-term resultant destruction, modification, or curtailment of critical habitat. The extent and duration of such effects and a conclusion regarding the impacts of the effects of the batched proposed actions are discussed below in sections IV and V of this BO.

III. EVALUATING THE PROPOSED ACTION

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 C.F.R. Part 402 (the consultation regulations). The NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any

cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat it must identify any reasonable and prudent measures available.

Guidance for making determinations on the issue of jeopardy and adverse modification of habitat are contained in *The Habitat Approach, Implementation of Section 7 of the Endangered Species Act for Actions Affecting the Habitat of Pacific Anadromous Salmonids*, August 1999. (Appendix D)

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. The NMFS critical habitat analysis considers the extent to which the proposed action impairs the function of essential habitat elements spawning, rearing, feeding, sheltering, or migration of UCR steelhead and UCR spring chinook salmon when compared to the existing environmental baseline.

A. Biological Requirements

The first step in the method NMFS uses for applying the ESA standards of § 7 (a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation.

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally reproducing population levels at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stocks, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

Five general classes of features or characteristics determine the suitability of aquatic habitats for salmonids: flow regime, water quality, habitat structure, food (energy) source, and biotic interactions (Spence et al. 1996).

The direct impacts of the projects covered in this BO will be the loss of rearing habitat or habitat structure. Additionally, the placement of this material and the attendant in-water work will contribute sediment to the water column thus affecting water quality. The placement of rock groins and bars to redirect flow will likely have short-term and long-term impacts to the flow regime. The addition of mitigating features such as LWD will of themselves also alter flow regime and change the habitat structure of the system, presumably in a positive fashion. For this consultation, the biological requirements which will be adversely affected are flow regime, water quality and habitat structures. The impacts to these features will be temporary impacts to rearing and habitat characteristics that function to

support successful rearing and migration.

B. Environmental Baseline

The environmental baseline represents the current basal set of conditions to which the effects of the proposed action are then added. The term “environmental baseline” means “the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.” (50 C.F.R. § 402.02)

The term “action area” means “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action”. There are a total of five projects in the UCR ESU, all occurring in the Wenatchee River basin. The action areas for aquatic species are defined in the BA as immediately upstream of the projects up to .5 miles down stream of the project area. While these are distinct action areas within the Wenatchee River basin one could also consider the river basin as a whole when considering the relationship of the environmental baseline to the proposed projects.

Mainstem hydroelectric development in the Columbia River has resulted in a major disruption of migratory corridors essential to fish that may inhabit the action area. Some populations of UCR chinook and UCR steelhead currently migrate through nine dams in the river. Access to a substantial portion of historical habitat for both steelhead and spring chinook salmon was blocked by the construction of Chief Joseph Dam and Grand Coulee Dam on the mainstem Columbia River.

Artificial propagation programs considerably homogenized the UCR chinook ESU (Mullan et al. 1992). The Grand Coulee Fish Maintenance Program (GCFMP), 1940 to 1943, resulted in chinook being trapped at Rock Island Dam and hauled to the Leavenworth National Fish Hatchery (NFH) for artificial propagation or transported to Nason Creek to spawn naturally. Chinook currently produced from the Leavenworth facility are considered non-native, coming from Carson NFH stock. Hatchery propagation practices beginning with GCFMP have largely homogenized the steelhead stocks in the UCR ESU also. The proportion of hatchery steelhead remains high in tributaries to the upper Columbia River (65-80%). The five year (1989-1993) natural escapement prediction for the Wenatchee was 800 fish out of a total escapement of 2,500 steelhead (Busby et al. 1996). The most recent natural escapement prediction is somewhat lower, although the trend indicates growth in returns at about 2.6% annual increase. Substantial genetic mixing of populations within the ESU occurred, both historically (as a result of the GCFMP) and more recently as a result of the Wells Hatchery program. Extensive mixing of hatchery stocks throughout this ESU, along with the reduced opportunity for maintenance of locally adapted genetic lineages among different drainages, represents a considerable threat to steelhead in this region (62 Fed. Reg. 43949; August 18, 1997).

For both the UCR steelhead and spring chinook salmon ESUs, there also are local habitat problems such as irrigation diversions, degraded riparian and instream habitat from urbanization, land conversion to crops and orchards, livestock grazing, and timber harvest (NMFS 1996a, 1996b, 1997, 1998). There are 303(d) listings in the watershed for temperature, flow, pH and chemical contamination.

Application of the riparian conservation elements of the Northwest Forest Plan may lead to gradual improvements in habitat conditions for salmonids on applicable federal lands. However, the presence of highway 207 in the upper watershed and SR 2 downstream will continue to confine the meander capacity and riparian reserve of the system. Significant improvements in UCR steelhead and UCR spring chinook salmon production outside of the U.S. Forest Service and Bureau of Land Management lands are unlikely without changes in forestry, agriculture, and other practices that occur within non-federal riparian areas.

Escapements of UCR spring chinook are critically low in all rivers within the ESU. Long-term trends in estimated abundance also appear to be declining, and escapements in 1994-1996 were the lowest in at least 60 years (63 Fed. Reg. 11497; March 9, 1998). At least 6 populations of spring chinook salmon in this ESU were extirpated, and almost all of the remaining natural spawning populations have fewer than 100 spawners (63 Fed. Reg. 11497; March 9, 1998). In the analysis of abundance of 10 populations, each population was declining and 8 populations exhibited annual rates of decline greater than 20% (Meyers et al. 1998). The UCR ESU contains the only remaining genetic stock of spring-run chinook that migrated into the upper Columbia River Basin including fish that would have spawned in Canada (64 Fed. Reg. 14316).

Steelhead exhibited low abundances in the Methow, Wenatchee, and Okanogan Rivers. Recent five year mean natural escapements revealed 800 steelhead in the Wenatchee River and 450 steelhead in the Methow and Okanogan Rivers (Busby et al. 1996). From 1982 to 1986, the relative abundance of summer steelhead averaged 201 adult fish in the Methow River (Caldwell and Catterson 1992). There also was a 12% annual decline in total (natural and hatchery) adult escapement of steelhead from 1982 to 1993 in the Methow River and Okanogan River (62 Fed. Reg. 43949; August 18, 1997). Estimates of natural production of steelhead in the ESU are below rates of replacement (approximately 0.3:1 adult replacement ratios estimated in the Wenatchee and Entiat Rivers) (62 Fed. Reg. 43949; August 18, 1997).

The biological requirements of the listed species currently are not being met under the environmental baseline. Significant declines in distribution and abundance of steelhead and chinook may be attributed to hydroelectric development, irrigation withdrawals, hatchery production, and habitat degradation. To improve the status of steelhead and chinook, significant improvements in the environmental conditions of the proposed critical habitat are needed.

C. Factors Affecting the Species in the Action Areas

Factors affecting the species in the action areas are not unlike the factors affecting the species throughout the ESU. The FHWA and WSDOT BA and Baseline Indicators Matrixes lists the following factors affecting the species in the action areas. In the upper watershed at the 207/4 bridge site the channel is confined by the existing bridge. The physical location of SR 207 confines the natural meander of the river, restricts the flood plain, and restricts LWD contribution to the system. Private development (a 200 lot subdivision) adjacent to the bridge site further adds to system disturbance in the form of road density and impervious surface/storm water impacts.

Downstream, in the areas of the 2/226, 2/227, and 2/233A bridge scour repair sites, UCR steelhead and chinook salmon are subjected to degraded water quality that is listed under the Clean Water Act, 303(d) for temperature and pH. Additionally, non-point pollution from agriculture, and irrigation add pesticides and sedimentation to the system. Base and peak flows are impacted by forest practices, agriculture, irrigation, and road building.

Peshastin Creek, in the action area is also listed under section 303(d) for temperature and instream flow. The stream in the lower reaches has been largely channelized to accommodate the road building and adjacent land uses. Existing river problems of high sediment, low flow conditions, elevated temperatures, and nutrient loading will not be permanently increased by the proposed project. Installation of the drop structures has the potential to slow high stream velocities and improve fish habitat.

IV. ANALYSIS OF EFFECTS

A. Effects of the Proposed Action

Activities conducted under the proposed projects at the five work sites will affect water quality, the flow regime, and habitat structure and availability. Effects to water quality would be short term in duration and directly related to the extent and duration of in-water work. Effects on the existing flow regime would be more evident. The intent of the actions are to fill in scour holes which are also rearing areas for juveniles and potentially holding areas for upstream adults. Thus, the existing habitat structure in the area of the projects would be permanently altered. Typically, juvenile chinook would move out of pools to feeding stations during daylight hours but they return to the safety of pool habitat at nightfall, settling to the bottom (Groot and Margolis, 1991). Thus, rearing chinook could lose existing pools as a likely result of the proposed projects. However, the mitigation requirements of the HPA have been prescribed to render these environmental impacts short-term and temporary. The spatial loss of rearing habitat attributable to direct project activities and design will be replaced by LWD and boulder cluster placement elements of the project. As a result, compliance with the integrated conservation elements will ensure that habitat function and value would be maintained or improved over time.

The placement of groins and barbs will permanently re-direct river currents away from bridge abutments or piers at some of the project sites. The effects of flow alteration will not extend beyond 300 feet below the structures and should not affect other downstream habitat elements. It should be noted that the placement of groins and barbs may cause scour holes which may serve as rearing and holding habitat. Monitoring of the structures will provide data about the creation of scour and rearing habitat opportunities.

All of the project construction activities will occur within work windows approved by NMFS, USFWS, and WDFW and agreed to by the FHWA and WSDOT. The work windows will ensure work happens when no spawning chinook or steelhead are present (although adults of each species could be present in the system at those times). Juveniles of chinook and steelhead will be in the river

system during the projects and are most likely to be affected by the construction activity. Incidental take could result as scour holes are filled with large loose riprap. However, placement of riprap one rock at a time (rather than end dumped) into the scour holes will minimize the likelihood of incidental take. Lethal and sub-lethal forms of harm to juvenile chinook and steelhead could result as they are forced from feeding and resting habitat and are exposed to lower quality habitats and to predation.

In summary, the incorporation of conservation measures, BMPs, and HPA conditions into the proposed projects will substantially eliminate any long-term negative environmental effects of these projects. Monitoring of the projects will enable the action agency to track any residual impacts. In combination with the monitoring plan and the mitigation requirements of the HPA WSDOT is committed to eliminating any residual negative project impacts through further habitat restoration, i.e. LWD or boulder placement to create rearing/resting habitat. The need for additional effort will be assessed in the third year and final monitoring report.

B. Effects on Critical Habitat

The proposed actions will affect essential features of the designated critical habitat for UCR steelhead and UCR chinook. The NMFS designates critical habitat for listed species based on physical and biological features that are essential to each species. Essential features of critical habitat for steelhead and spring chinook salmon include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions.

Of these essential features, NMFS has determined that the construction activities and long-term impacts associated with these bridge scour repair projects will influence water quality, flow regime, substrate characteristics, cover/shelter or habitat structure, and riparian vegetation. The effects to water quality are expected to be a short-term impact. The long-term impacts of habitat modification may be ameliorated by the placement of LWD in the groin and barb structures. Additionally, placed rock is likely to recreate at least a portion of the affected pool/scour habitat and flow at the ends of groins and barbs is also likely to create some scoured pool habitat.

The combined projects propose to place over 1300 cubic yards of riprap into the Wenatchee River system and to cover over 2000 square feet of river substrate with non-native material. As noted above, the placement of LWD and the redistribution of bed substrate due to placed rock features and scour near the groins and barbs is expected to ameliorate some or most of these short-term negative impacts. The HPA requires compensatory mitigation for impacts to fish and fish habitat.

C. Cumulative Effects

Cumulative effects are the effects of present and future non-federal actions that are reasonably certain to occur in the action area(s). Unrelated, future Federal actions are not considered in this BO. Instead, those actions would be subject to future consultation under section 7 of the ESA. Accordingly, the effects of those future Federal actions would be discussed in separate biological opinions (if required), prepared before those actions are initiated.

Numerous non-Federal projects, unrelated to bridge scour repair projects, could occur within the watershed or action areas. These could include road construction and maintenance, timber harvest, and agricultural activities. These projects could contribute to the effects on listed or proposed species or their habitat.

Until improvements in non-Federal land management practices occur, NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Now that the UCR steelhead and spring chinook salmon ESUs are listed under the ESA, NMFS assumes that non-Federal land owners in those areas will also take steps to curtail or avoid land management practices that would result in the take of those species. Such actions are prohibited by section 9 of the ESA, and subject to the incidental take permitting process under section 10 of the ESA. Future Federal actions, including the on-going operation of hatcheries, harvest, and land management activities will be reviewed through separate section 7 processes.

V. CONCLUSION

Based on the available information, NMFS has determined that the activities conducted under the proposed action(s) will have short-term negative impacts in project areas that are already experiencing scour and bank destabilization. The effects of long-term impacts are less obvious and it may be concluded more balanced. Scour repair will impact some pool habitat but it will also arrest the continuing bed erosion and degradation that tends to cause a head cutting affect up river that further destabilizes river substrate. The inclusion of LWD and spawning gravels as well as placed rock habitat features further diminishes the negative impacts of these projects. Consequently, NMFS concludes that the proposed actions covered in this BO are not likely to jeopardize the continued existence of UCR steelhead or UCR chinook salmon.

NMFS used the best available scientific and commercial data to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996c) to the proposed action and found that it would cause minor short-term adverse degradation of anadromous salmonid habitat due to sediment impacts, in-water construction, and habitat loss. These effects will be balanced in the long term. Direct mortality from this project may occur during the in-water work (see; Incidental Take Statement, below).

VI. REINITIATION OF CONSULTATION

This concludes formal consultation for the WSDOT Batched Bridge Scour Repair projects. As provided in 50 C.F.R. 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of take specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the agency action that may affect listed species to an extent not considered in this BO; or (3) the agency action is subsequently modified in a manner

that causes an effect to the listed species or critical habitat not considered in this BO; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending re-initiation.

VII. INCIDENTAL TAKE STATEMENT

ESA Section 9 (and rules adopted under ESA section 4(d)) prohibits any taking of listed species. *Take* is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct of listed species without a specific permit or exemption (50 C.F.R. 217.12). *Harm* in the definition of “take” in the Act means an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering (50 C.F.R. 222.102). *Harass* is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering (50 C.F.R. 222.102).

Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not prohibited taking, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that incidental take of UCR steelhead and chinook salmon could result from project activities as described in the BO. However, despite the use of the best scientific and commercial data available, NMFS cannot credibly estimate a specific amount of incidental take of individual fish. This is partly because NMFS anticipates incidental take of UCR steelhead and chinook resulting from these projects will be difficult to detect. Some fish might seek shelter in the existing riprap in the project areas, concealing killed or injured individuals. Further exacerbating the problem of killed or injured individuals is the small size of the juveniles most likely impacted by these projects. Finally, temporary water turbidity during and shortly after project activities will probably conceal killed or injured fish. NMFS also concludes that the displacement of juveniles from rearing sites (resting or feeding) will subject these fish to *harm* in the form of crowding, less productive feeding stations and predation.

The NMFS anticipates that some individual fish, including steelhead and chinook, may be killed or injured during project construction. The combined projects in the Wenatchee Basin are currently designed to place approximately 1000 cubic yards of riprap and to permanently cover approximately 2200 ft² of river substrate. An additional 1800 ft² of stream bed will be temporarily impacted by the placement of work pads to access the pier sites. Mullan et al, 1992, reported densities (number/100 m²) for chinook and steelhead juveniles ranging from a low of .1 to as high as 250.4 individuals per 100 m². When applied to the habitat impacted by the projects in question the range of potential impact to individuals becomes too unreliable to site as potential take in this incidental take permit. NMFS further acknowledges that the long-term impacts of the habitat loss may be minimized through the placement of the mitigation structures that are proposed as per the draft ISPG. NMFS prefers to document the 'as built' impacts, both positive and negative, and monitor the sites for the re-creation of scour/pool habitat through the placement of LWD and rock habitat structures.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take of steelhead and chinook:

1. To minimize the amount and extent of incidental take from construction activities, measures shall be taken to: Limit the duration of in-water work, to time such work when the presence of listed fish species is minimized, and to implement effective pollution control measures to minimize the movement of soils and sediments both into and within the stream channels.
2. The WSDOT shall develop a monitoring plan for these projects to include a methodology and time table to revisit the project sites in an attempt to quantify whether the built minimization strategies (LWD placement, spawning substrate release, placed rock structures) have mitigated the long term loss of pool habitat.
3. All clearing of woody vegetation shall be limited to the minimum necessary extent required during project construction. Avoid impacting established stands of trees in the project areas. Salvage vegetation for replanting where possible, and re-use large woody debris on-site. Revegetate newly created slopes and impacted riverbank areas upon completion of construction.

C. Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, WSDOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

- 1a. The various construction windows for these projects shall only occur from July 1 through August 11, keeping the actual in-water work to a minimum. Except as noted the provisions of the HPA are incorporated here by reference. WSDOT shall comply with the provisions of the HPA and any amendments as may be directed by WDFW on-site personnel. This condition may modify (shorten) the work window referenced in the WDFW HPA.

1b. WSDOT shall follow the erosion control measures outlined in the HPA, plan design, and construction contract specifications, and as mentioned in the RPMs, above. WSDOT activities to ensure adherence to those measures shall include frequent, regular inspection and monitoring during construction activities and for a period of three years thereafter to track the success of those measures in preventing future scour threat to the affected bridge structures.

2a. The WSDOT shall provide an “as built” plan of river habitats that have been affected by these projects. The quantification shall include an assessment of pool habitat affected and non-pool habitat type (spawning, glide etc.), shown in plan view drawings. These plan drawings shall be used during project monitoring assessments which shall occur as per the WSDOT monitoring activity plan for a period of three years.

2b. The data from this assessment shall be submitted to NMFS Washington Habitat Branch (WHB) by September 30, 2000. Results of monitoring in the form of a yearly (minimum of 3 years, and a final report) shall be submitted to the WHB at the end of the yearly monitoring season.

3. Only native vegetation shall be used to revegetate disturbed riparian areas. All plantings shall be maintained and replaced as needed, for a period of at least three (3) years to obtain a minimum of 80 percent survival rate by the end of the third growing season.

VIII. REFERENCES

A. Personal Communications

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Subject: Request for information relative to 14 point request

Telephone conversation April 13, 2000 from Dan Guy, NMFS to Gregor Myhr, WSDOT. Subject:
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Telephone conversation May 22, 2000 from Dan Guy, NMFS to Bob Steele, WDFW. Subject:
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B. Literature Cited

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National Marine Fisheries Service. 1996c. Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. NMFS, Habitat Conservation Division, 525 NE Oregon Street, Portland, Oregon. 28 pages.

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National Marine Fisheries Service (NMFS). 1998. Factors contributing to the decline of chinook salmon: an addendum to the 1996 west coast steelhead factors for decline report. Portland, OR. 70 pp.

Spence, B.C., G.A. Lomnický, R.M. Hughes, and R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. ManTech Environmental Research Services Corp., Corvallis, OR.

APPENDIX A:
Draft Hydraulic Project Approval

APPENDIX B:
Status Review of West Coast Steelhead from
Washington, Idaho, Oregon, and California

APPENDIX C:
Status Review of Chinook Salmon from
Washington, Idaho, Oregon, and California

APPENDIX D:
The Habitat Approach